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Let's Explore Health Services Delivery with Rams Or A Vision for an Air Force Medical Home Concept of Operations

Anthony P. Tvaryanas, M.D, Ph.D, M.P.H.&T.M.

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Technical Report

AIR FORCE RESEARCH LABORATORY
711TH HUMAN PERFORMANCE WING
HUMAN SYSTEMS INTEGRATION DIRECTORATE
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-7320
AIR FORCE MATERIEL COMMAND

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ANTHONY P. TVARYANAS, Colonel, USAF	MATTHEW T. TARANTO, Major, USAF
Technical Director	Chief, Human Systems Analysis Division
Human Systems Integration Directorate	Human Systems Integration Directorate
711th Human Performance Wing	711th Human Performance Wing
Air Force Research Laboratory	Air Force Research Laboratory

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14. ABSTRACT
This paper was a working document to capture concepts and ideas as they were developed during the task of defining a vision for the Air Force Medical Service (AFMS) and its constituent Aerospace Medicine Enterprise (AME) 5-10 years into the future ("AME 2020") A deliberative systems thinking approach was used to deconstruct the current non-expeditionary/ in-garrison healthcare environment and create a new one founded on systems principles. The basic ideas and concepts developed during this cycle of destruction and creation were foundational to the subsequent AFMS' Human Performance Concept of Operations (CONOPS) and its constituent description of the Air Force Medical Home.

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Aerospace medicine, Air Force Medical Home, health care, human performance, systems thinking, value

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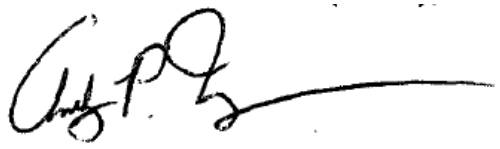
Note from the Author

"Let's Explore Health Services Delivery with Rams" began as a working document to capture concepts and ideas as they were developed during the task of defining a vision for the Air Force Medical Service (AFMS) and its constituent Aerospace Medicine Enterprise (AME) 5-10 years into the future—that is "AME 2020." The concepts and ideas were developed over more than a year of weekly discussions and debates among a select cadre of innovative aerospace medicine practitioners living and working on the peripheral edges of the AME. In an affirmation of Col John Boyd's "Destruction and Creation" essay, this cadre discovered that they needed to deconstruct the AME before they could proceed to create. Thus unencumbered by historical tradition, they arrived at a very different organizational construct for providing health services and mission support in the non-expeditionary/in-garrison environment.

Although AME 2020 eventually withered within the military medical bureaucracy, the basic ideas and concepts found new life in the AFMS' Human Performance Concept of Operations (CONOPS) and its constituent description of the Air Force Medical Home, which was formally endorsed by the Air Force Surgeon General on 14 May 2014. This paper has value for people trying to understand the complex systems thinking that was the genesis of the concepts and associated organizational framework axiomatically put forth in the Human Performance CONOPS. It also begins to lay out, in the clear light of day, some of the critical thinking and debate that we must understand and continue to engage in as Air Force medical professionals and leaders. Accordingly, "Let's Explore Health Services Delivery with Rams" was submitted, in its original format, for archiving and dissemination as a technical paper. I am hopeful that it will be read, discussed, and considered by those responsible for designing or leading our in-garrison healthcare delivery systems.



ANTHONY P. TVARYANAS
Col, USAF, MC, SFS
711th Human Systems Integration Directorate
Air Force Research Laboratory

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A New Approach to Fly By

It is a terrible thing to see and have no vision.
— Helen Keller

Systems Thinking Applied to the AME

The Air Force Medical Service (AFMS) and its constituent Aerospace Medicine Enterprise (AME) undertook the task to define a vision for 5-10 years into the future—that is AME 2020. This undertaking was inherently complex, and to deal with that complexity, *systems thinking* was used to avoid cognitive overload and collapse of effort. Systems thinking is both a world view and a means to develop and understand a system and to solve problems. A nontrivial challenge in systems thinking is to define and understand the *system of interest*. A system of interest can be hardware or technology based, human activity based, or a hybrid of the two. The system of interest can also take the form of a problem; a problem is essentially a system with a linked critical value proposition. This problem must be assessed as a system that exists in a larger environment (Edson R. *Systems Thinking. Applied. A Primer*. Applied Systems Thinking Institute: Analytic Services Inc, 2008).[1]

For AME 2020, the problem was articulating the need, top-level function, or critical value proposition for the AME (<u>if indeed there is even one!</u>) given observed and forecasted changes for the larger AFMS and Air Force operating environment. The corresponding system of interest—at least for the present—was the hybrid human activity-technology system known as the Aerospace Medicine and Dental Squadron (AMDS). Systems thinking answers the above question (why an AME?) using *synthesis*—that is, putting together and assessing the system as a whole and understanding it in its environment. Synthesis is distinguished from *analysis*, the latter in which the system is decomposed and understood from its component parts, behavior, and activities. Analysis is the traditional, machine-age way of thinking but remains of value in the systems age <u>if combined with synthesis</u>.

[1] A clinically-oriented example: healthcare is famous for conceptually breaking patients down into a series of systems: skeletal, respiratory, digestive, reproductive, etc. However, the present focus on patient-centered care requires care providers to take a more holistic approach to patients and look at the interrelationships of those systems and how their functioning contributes to or detracts from patients' goals. Thus, osteoarthritis of the knee manifesting symptomatically as knee pain that is limiting activity (i.e., a skeletal system problem) in an individual (i.e., the external environment of the skeletal system) who is an avid runner (i.e., an implied value proposition)should be addressed within the context of a clinical encounter using systems thinking.

Synthesis—Understanding the Containing System

Exercising synthesis, we needed to look to the AME's containing system, which is the AFMS. For the sake of expediency, it was offered axiomatically that the purpose of the AFMS, derived in terms of its containing system (i.e., the defense establishment), is to maximize the probability that an Airman, under stated conditions in an operational environment, will be able to perform satisfactorily when necessary. This statement of purpose is essentially the definition of operational availability (A_o) applied to the service member—something that we will call human availability (A_h). Interestingly, the analogy can be extended to include A_o components like mean maintenance downtime (e.g., lost duty time), which in turn includes such significant factors as active maintenance time (e.g., actual time to provide a medical service), logistics delay time (e.g., transportation and waiting time to provide a medical service), and administrative delay time (e.g., profile processing time). Further specification of the A_h concept is deferred for the sake of this discussion other than to offer that, when combined with life-cycle cost, we can derive the AFMS critical value proposition:

$$\text{Value Figure of Merit} = \frac{\text{human availablity}}{\text{life}-\text{cycle cost}}$$

Scanning the environment with a systemic lens (i.e., perceiving the world in terms of systems), the AFMS can be described in terms of three fundamental types of hybrid human activity-technology systems: 1) an expeditionary/mobile healthcare system, 2) a definitive/fixed healthcare system, and 3) an expeditionary-to-definitive healthcare transportation system (e.g., aero-evacuation [AE]/Critical Care Air Transport Team [CCATT]). These three systems—comprised of people, hardware, software, and policies/processes—are the AFMS centers of gravity. To paraphrase Clausewitz, they are the source of power that provides the AFMS the ability to act (or provide capability). The AMDS is an instantiation of the second fundamental type of AFMS system. It is more accurate, from a systems engineering perspective, to state that the AMDS is a subsystem. The AMDS, along with the Medical Operations Squadron (MDOS), are hybrid human activity-technology systems that, along with several other elements, normatively comprise the base-level definitive/fixed healthcare system (Figure 1). Collectively, the AMDS and MDOS each contribute to the critical value proposition of the higher-level containing system. But why are two sub-systems necessary and what are their derivative critical value propositions?

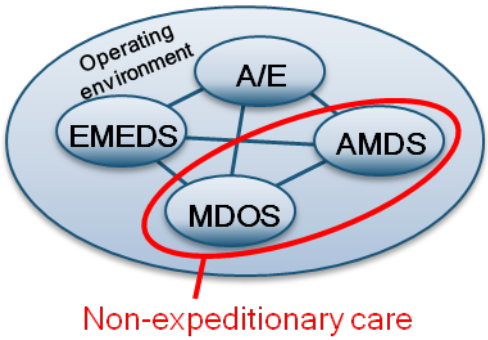

Figure 1. Current AFMS systems.

Multiple Viewpoints—Why Aerospace Medicine?

Much of the power of systems thinking is derived from the understanding and application of multiple perspectives to the situation being analyzed. These perspectives arise from various stakeholders or from alternative views employed by the systems practitioners. Given observed difficulties among aerospace medicine leaders in explicitly articulating a unique critical value proposition for the AMDS, several viewpoints on aerospace medicine are deliberately offered below:

- **Historical Dinosaur:** This viewpoint holds that aerospace medicine emerged as a distinct discipline in response to the novel psycho-physiologic challenges encountered in high-altitude and high-acceleration environments and the need to address the emerging safety and health implications. The uncertainty surrounding the occupational medicine considerations of the early aviation and space environments necessitated a predominately learning, *iterative* care process (see Table 1) that was highly dependent on the tacit knowledge of select practitioners. As the field matured over the ensuing decades, uncertainty gave way to greater certainty, care become more *sequential* in nature (see Table 1) based on increasingly standardized processes, and the need for highly trained and experienced clinicians decreased accordingly.

Table 1. Iterative versus sequential care processes.

Iterative	**Sequential**
Unstructured problems	Structured problems
High uncertainty	Low uncertainty
Trial & error; templating (pattern matching)	Rules applications
Tacit knowledge	Explicit knowledge
Testing for hypothesis generation & probe-and-learn cycles	Verification testing
Exploratory	Confirmatory
Few-to-many iterations	One iteration
Expert practitioner	Novice practitioner
Management focus on individual patient & problem; efficient experimentation, learning & solution discovery	Management focus on class of problems & solution execution

While this trend is not unique to aerospace medicine, it suggests that the original critical value proposition for aerospace medicine may no longer be valid. If this viewpoint is accepted as true, then there is no longer a need for a distinct aerospace medicine system. Additionally, from the more academic perspective of medical disciplines, we might also then argue that aerospace medicine could be collapsed back into occupational medicine, thereby reducing unnecessary variety, and in turn, complexity. For example, why should the dangers of hypobaric hypoxia warrant a separate discipline as compared to cadmium nephropathy?

- **Occupational Medicine:** This viewpoint is similar to the prior viewpoint in that it focuses on the importance of the high-altitude and high-acceleration environments. In this case, however, the presence of environmental hazards continues to drive the need for a system that can provide concurrent primary and occupational medical services. The critical value proposition is centered on the system's ability to address unique occupational issues associated with the aerospace enterprise. However, the recent emergence of remotely piloted aircraft, which largely mitigates the traditional aerospace occupational hazards, is a disruptive disturbance to the existing system's critical value proposition. As the system attempts to address A_h in Airmen not exposed to high-altitude and high-acceleration occupational hazards, the specificity of the services provided by the system progressively diminish. Outside the high-altitude and high-acceleration environments, the

occupational hazards become more generic (e.g., ergonomics, shift work, stress, prolonged vigilance, physical and cognitive fatigue, etc.) and are shared by Airmen seen within both the AMDS and MDOS systems. Moreover, all AFMS providers caring for Airmen are expected to provide some form of occupational medicine, minimally an occupational disposition in terms of an Airman's ability to do their job, participate in physical training, and/or deploy to austere environments. Consequently, the provision of more generic occupational medicine services, beyond the high-altitude and high-acceleration environments, does not allow for the specification of a distinct critical value proposition. If this viewpoint is accepted as true, then there is no rationale to expand the aerospace medicine system beyond traditional aircrew.

- **The Warfighter:** This viewpoint formulates the system's critical value proposition in terms of provision of health support services for those on the "pointy end of the spear"—that is, the warfighter. These specific Airmen are very important because they are directly responsible for achieving battlefield effects, or so goes the proposition's logic. However, such a viewpoint can be attributed to confounding since the traditional Air Force warfighters of yesteryear were one and the same with those Airmen operating in the high-altitude and high-acceleration environments. Thus, historically, it was the unique occupational issues associated with the aerospace enterprise that led to the system's focus on the warfighter. As with remotely piloted aircraft, the last decade has witnessed the emergence of dynamic networks of globally distributed Airmen who collectively act to perform functions and achieve effects previously ascribed to the traditional warfighter. The majority of the Airmen working within these networks perform job tasks in environments that, in the past, would have been classified as "support"—that is, the shaft of the spear (e.g., intelligence, computers and communications, etc). If future warfighting is to occur increasingly in artificial, technologically-defined (e.g., cyber) environments rather than natural, physical environments (e.g., air and space), then it will become increasingly difficult to dichotomously parse Airmen into warfighter and support categories. Occupational hazards and exposures experienced by warfighters and support personnel will blur, and the end effect of this disruptive trend will be a steady erosion of aerospace medicine's critical value proposition.

- **The Air Force's "A Team":** This viewpoint represents an emerging perspective that is not founded on historical trends—that is, it is revolutionary rather than evolutionary. It is based on the decidedly non-egalitarian critical value proposition that the performance of some Airmen is more important than others and it is to our survival benefit to focus on the sustainment of the health and performance of this "A Team." Such a viewpoint is entirely consistent with that of the traditional sports franchise; some players are integral to the success of the business model. Thus, our "A

Team" is comprised of those Airmen whose performance is directly responsible for the recurring activities that produce value for Air Force stakeholders. For the sake of brevity, we can define the latter stakeholders as our joint force commanders. If this viewpoint is accepted, then we have identified a potentially unique critical value proposition but at the expense of creating a schism with the traditional discipline of aerospace medicine.

- **Endogenous Viewpoint:** This viewpoint holds that if a problem is resistant to change, then the common solution or the underlying system itself could well be part of the problem. This is one of the simplest concepts in systems thinking. The endogenous viewpoint is essentially system-as-cause thinking. In the case of AME 2020, the endogenous viewpoint might hold that our problem arises from the need to identify a raison d'etre to justify the continued existence of the AME and its systemic instantiation in the form of the AMDS—that is, the problem is an expression of the innate desire of those working in the AME for continued relevance and professional survival. In support of the endogenous viewpoint is the observation that few near peer air forces maintain AMEs structured and staffed along the model currently employed by the AFMS.

Problem Definition—Entry Point to Applied Systems Thinking

As previously stated, multiple viewpoints are an essential part of the systems thinking process. To have a solid understanding of the problem situation, we must entertain a reasonable variety of viewpoints so that we can look at the problem situation in multiple ways and through multiple lenses. The resulting insights are critical to developing a solution that will generally be accepted by, and meet the needs of, the containing system (i.e., the AFMS). For the AME 2020 problem situation, our review of multiple viewpoints led to the identification of only one critical value proposition that had sufficient specificity to warrant further analysis: *health in the context of mission to sustain performance* (Airman optimization).

The value proposition is depicted in Figure 2 in the form of a workflow and holds throughout the base-level, non-expeditionary healthcare system. To maximize A_h, the healthcare system provides preventive and clinical services to maintain an Airman's health or expedite their recovery from negative deviations from health (*direct patient care*). At the completion of every encounter, a deliberative and affirmative decision must be made whether or to what degree an Airman can do their job, both in garrison and potentially in the deployed environment (an *occupational and operational disposition*). This decision is the shared responsibility of a strategic triad comprised of the Airman, the Airman's leadership, and the healthcare provider. The decision requires communication and collaboration among the members of the triad to set goals and implement action plans. Only four outcomes are possible: return to duty, not cleared for

duty (quarters), temporary limitations, or permanent restrictions, the latter leading to accommodation or medical separation. Airmen with duty limitations are proactively enrolled in occupational *case management* with the objective of expeditiously returning them to pre-illness or pre-injury function or to the highest level of functioning achievable. Case management is critical to the value proposition because it facilitates safe and timely return-to-work and results in cost savings.

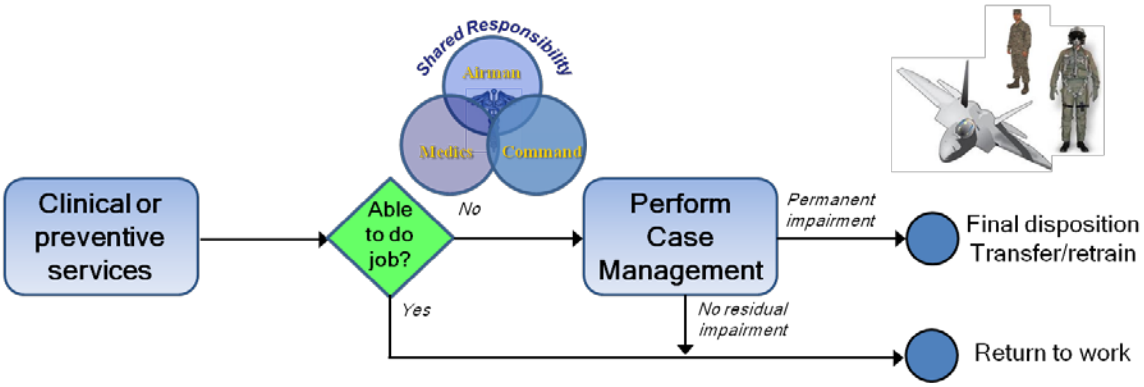

Figure 2. Core workflow supporting health in the context of mission.

The secret of the value-producing workflow depicted in Figure 2 is that it is a hybrid, blending elements of direct care and occupational medicine—what we will call Air Force operational medicine. It is also potentially very simple and applies to all Airmen. AFMS personnel should understand that this workflow is the bedrock of operational medicine. In executing this workflow, healthcare providers must appreciate four essential elements: the Airman's tasks (i.e., their job), the environment in which the tasks are being performed, the equipment that is used, and, of course, the Airman. This information is necessary to provide direct patient care (understanding the impact of the job on health as well as the impact of treatment plans on the job and safety), make appropriate operational medical dispositions, and perform necessary occupational case management. By focusing on the Airman as a worker within a workplace, the healthcare team will better understand the human performance requirements of their patients, and more effectively identify unmet health-enabled human performance needs (*human performance sustainment*). In addition, application of the shared responsibility model to occupational dispositions and performance of occupational case management requires regular communication and coordination between healthcare providers and the AF operational community (*line-medical integration*).

Based on this discussion of the value-producing workflow, we have identified a core set of services. Three of these services—direct patient care,

occupational and operational dispositions, and case management—collectively yield two higher-level services: performance sustainment and line-medical integration. This relationship is depicted in Figure 3, which also includes a foundational, enabling service (programmatic oversight) that addresses non-clinical occupational medicine activities.

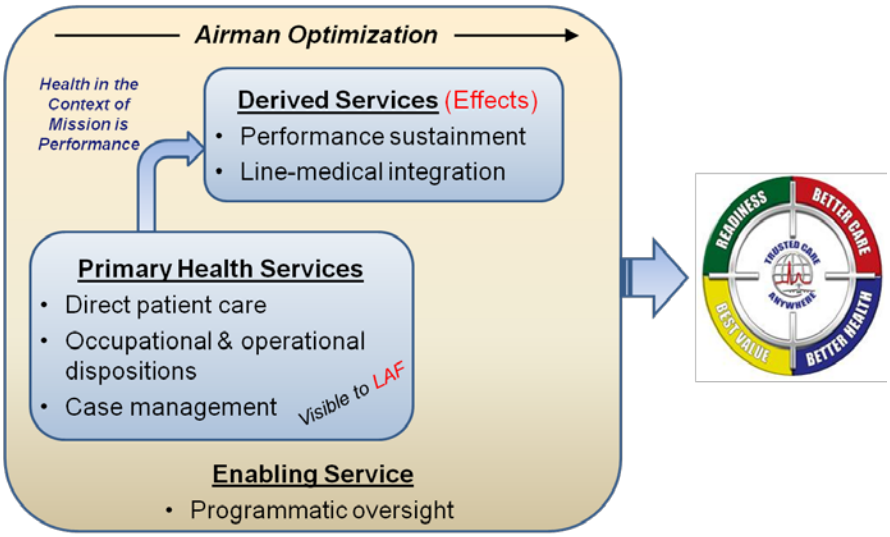

Figure 3. Core set of base-level value producing services.

Applying Systems Thinking—From Synthesis to Analysis

Having used synthesis to define the system of interest and understand the problem situation, it is now logical to address the analytic triad of structure, function, and process. This triplet equates most strongly to classical systems engineering. The systems thinker must develop physical, functional, and process architectures, which together provide a complete understanding of systems. This activity can be problematic as many structures can perform the same function. Our challenge here is to propose a system that delivers *health in the context of mission to sustain performance.*

As depicted in Figure 4, the current AFMS base-level, non-expeditionary healthcare system is comprised of two subsystems—AMDS and MDOS—that provide services to distinct Airmen populations. As previously described, these systems share a common value proposition that can be visualized as a single operational medicine workflow (Figure 2), based on core competencies in direct clinical care and occupational medicine, which supports health in the context of mission. Thus, process re-engineering started with a single population of Airman who require operational medicine services. Process re-engineering was

governed by a range of considerations, some of which we will describe in further detail.

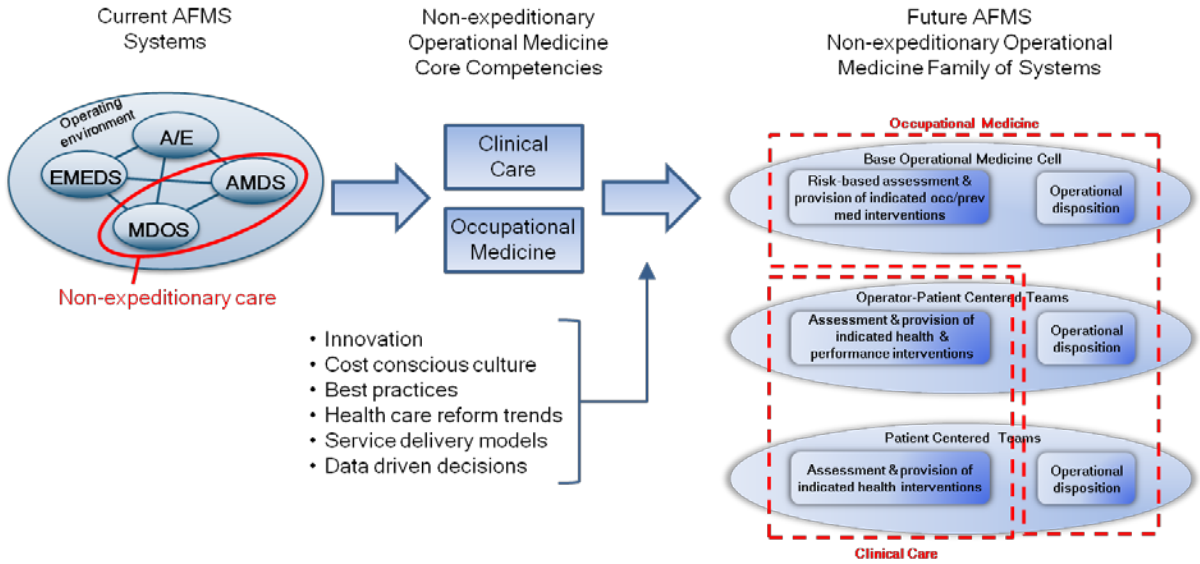

Figure 4. Process re-engineering from present to future AFMS healthcare systems.

While the healthcare sector has a mixed record with disseminating clinical innovations and system improvements, Bohmer (*N Engl J Med* 2011, 365;22:2045-7) identified four habits of high-value healthcare organizations that are portable across settings:

- **Specification and planning:** To the maximum extent possible, activities and decisions are specified in advance, ranging from patient flow and workload to the use of clinical algorithms and clinical decision support tools. This habit includes separating heterogeneous populations into clinical or occupational subgroups with distinct pathways.
- **Infrastructure design:** Purposely designed microsystems are used to support the subpopulations and pathways defined by specification and planning. The microsystem incorporates staff, information technology, facilities, and the policies and procedures contributing to the delivery of health and human performance.
- **Measurement and oversight:** Development and use of internally derived metrics by which processes and performance are assessed. These are not measurements imposed by outside regulatory agencies.
- **Knowledge and innovation:** The process of collective self-study by which knowledge and innovation are disseminated. It is development of a culture of selfless improvement by both providers and patients.

Application of the specification and planning habit led to the identification of two, non-mutually exclusive approaches for defining subpopulations (Figure

5). The first approach adopted the previously described "A Team" viewpoint to prioritize the utilization of specialized healthcare personnel. The essence of the "A Team" viewpoint is that the performance of some Airmen (henceforth referred to as "operators") is critical to mission success. These operators are analogous to players on a professional sports team. The goal is to facilitate these operators maintaining a high level of performance and not just intervene after a performance insult (i.e., illness or injury). Relative to non-operators, medical support activities for operators involve closer coordination with the operational community (line-medical integration) to identify individual Airman's performance requirements and the corresponding threats within the operational context, to proactively mitigate threats or the consequences of threats, to provide tailored rehabilitation when performance degradation does occur (care and case management), and to maximize individuals' overall availability to perform the mission (human performance sustainment). The relatively resource-intensive medical support for this group equates to winning wars (or winning games in the sports analogy).[2]

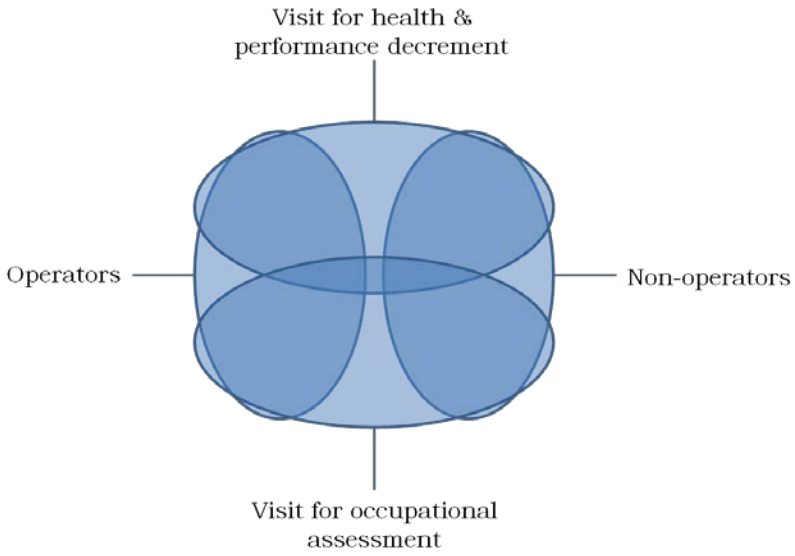

Figure 5. Venn diagram of sub-populations.

The second approach to specification focused on the nature of Airmen visits rather than the type of Airman. Within the operational medicine context,

[2] It is important to note that the core value-producing workflow is the same for both operators and non-operators. All Airmen benefit if healthcare providers consider mission-driven human performance requirements at every encounter. The distinction between medical support for operators versus non-operators is in the level of knowledge—and the level of effort required to obtain that knowledge—of the previously described essential elements: the Airman's tasks, the task environment, the equipment (or weapon system) used, and the Airman. The operator/non-operator dyad could be collapsed if sufficient healthcare personnel resources were available.

Airmen present for either of the following general reasons: 1) they are at risk for or have a known health and performance decrement, or 2) they require an occupationally-related assessment or service (Figure 5). Recalling the distinction between iterative and sequential processes described in Table 1, workflows addressing health and performance decrements tend to be more iterative in nature as compared to those for occupationally-related assessments that are more sequential in nature. Sequential workflows address structured problems for which there are well defined processes and rule sets (e.g., AFI 48-123, AF Waiver Guide), which aptly describes much of the current AME physical exams and standards work.

Both of these approaches to specification drive unique infrastructure design. For the iterative (unstructured problem) workflows focused on health and performance decrements, two microsystems are proposed to provide tailored serves to operators and non-operators (Figure 6). Operator-Patient Centered Teams assess and provide indicated health and performance interventions on the basis of the clinical and occupational presentation of the Airman. As an operator involved with an Air Force weapon system, the human performance requirements to perform the mission are holistically woven into the clinical setting to arrive at an optimized care plan and operational disposition. Patient Centered Teams assess and provide indicated health interventions to non-operator Airmen to sustain their performance in their support roles with appropriate operational disposition.

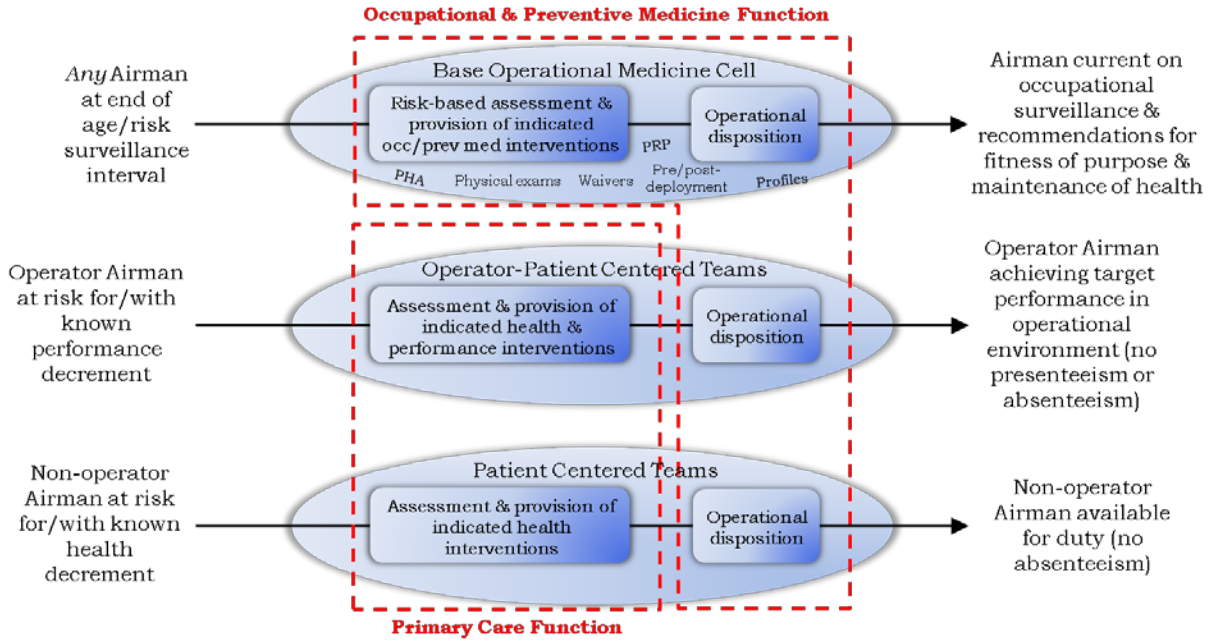

Figure 6. Specification of subpopulations and microsystems.

Given current trends in healthcare innovation and reform, both the Operator-Patient and Patient Centered Teams are organized around the Patient Centered Medical Home (PCMH) model, which is the emerging standard of care for delivery of primary care. This change has already occurred for non-operators, but represents a seismic shift in how the AME is currently organized to deliver clinical care. The inclusion of multiple physician extenders into physician led, multi-disciplinary care teams will allow providers to practice at the limits of their capability,[3] improving physician utilization and thereby having a force multiplying effect while increasing the value of services delivered. However, the implementation of care teams into the AME will necessitate the minimum requirement that physician providers be board certified in a primary care specialty so that they are duly qualified to provide clinical oversight of the care team (another standard of care). Overall, the Operator-Patient and Patient Centered teams will primarily differ in terms of empanelment levels and ancillary members of the care team. However, the core element of the care teams responsible for direct care should be nearly identical.

For the sequential (structured problem) workflows focused on occupationally-related assessments or services, a single microsystem is proposed for both operators and non-operators—the Base Operational Medicine Cell (BOMC). In the past, responsibility for these activities was largely leveraged on traditional primary care teams, often with little additional training, as part of their routine daily medical practice, resulting in inconsistent and less than optimal delivery of occupational and operational medicine services and underutilization of return-to-work processes. To redress this shortfall, the BOMC was specifically designed as a dedicated system, comprised of standardized workflows and staffed by specially trained practitioners, to deliver high value occupational and operational medicine capabilities. By coupling standardized workflows with high-volume practice, it is possible to leverage a very limited number of expert physicians through a team of experienced and trusted extenders (i.e., operational medical technicians, occupational health nurses, and physician assistants) to effectively and efficiently provide occupational and operational medicine services to the entire workforce at each Air Force installation.[4] The provision of a dedicated system for occupational and operational medicine acknowledges the demanding nature of providing these services and the importance of these services for installation mission success.

[3] As a result of the healthy worker effect, operators tend to be healthier than non-operators, with the implication that more of their care could be accomplished by non-physician providers practicing at the limits of their license (i.e., optimal utilization).
[4] This model mirrors the standard approach currently used in the civilian occupational medicine sector where occupational health nurses are the primary service provider.

One group of stakeholders that has yet to be explicitly addressed up to this point is Air Force beneficiaries. It is important to note that the provision of beneficiary healthcare does not directly contribute to A_h, and hence, the AFMS critical value proposition. Arguments have been advanced that beneficiary care yields indirect effects on A_h, but those arguments are conjectural at best. Nonetheless, for the purpose of this discussion, it was assumed that the AFMS would continue to provide beneficiary healthcare and that care delivery would occur in military clinics.[5] Application of the specification and planning habit to the problem of beneficiary care then led to the identification of a new subpopulation with different workflows and outcomes as compared to those previously described, thereby driving yet another microsystem (Figure 7). However, a countervailing perspective to this population partitioning was the current family practice model based on the premise of care provided within the context of family and community (Bagley B. *Fam Pract Manag* 2005;12:59-63). It was decided, after discussion with stakeholders, to balance both the specification and planning habit and the family practice model by developing microsystems around Airmen subpopulations (i.e., operators vs. non-operators) and providing care for these Airmen within the context of family (i.e., empanel family members within the Airman-specific microsystems).

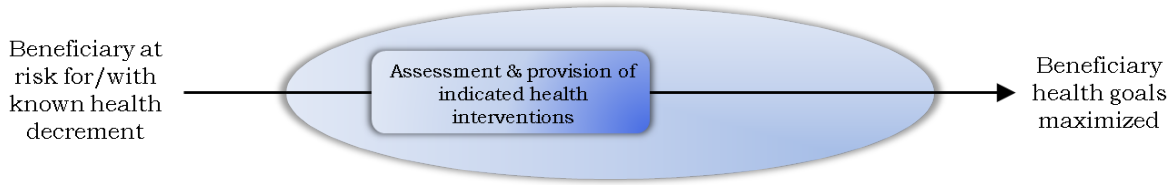

Figure 7. Specification of beneficiary microsystem.

Implementation of these new system designs requires measurement and oversight to enable data driven decision making and system management. The AFMS and AME will need to develop, collect and publish performance data that demonstrate how the organization as a whole, each care team, and each provider has performed on a number of metrics that are primarily used for internal process control and performance management. The AFMS should also integrate these measurement activities with other organizational priorities such as pay for performance (bonuses), annual target setting, and improvement activities, making measurement an integral part of accountability and performance management. Lastly, the AFMS and AME must continue to

[5] An organizational commitment to provide healthcare to beneficiaries need not necessarily imply that beneficiaries be seen in military clinics. Other alternatives exist, such as directly providing healthcare insurance to beneficiaries or providing subsidies to beneficiaries to acquire healthcare insurance through the emerging healthcare insurance exchanges that are being established as part of the Affordable Care Act.

innovate with workflows by creating, testing, improving, and implementing workflow redesigns to achieve high levels of efficiency and quality within its healthcare systems.

From AME 2020 to the Air Force Medical Home

To create the future you must transform the system.
— John Warden

In developing a vision for AME 2020, we described a family of systems built around a core value-producing workflow to provide operational medicine services to various subpopulations in the non-expeditionary environment. However, using the four habits framework, it was surmised that there actually should be an overall Air Force Medical Home (AFMH) in which preplanning and specification, microsystems and subpopulations, metrics and oversight, and knowledge and innovation reside. The Base Operational Medicine Cell, Operator-Patient Centered Team, and Patient Centered Team triad are simply scalable constituent elements of the overall AFMH (Figure 8).

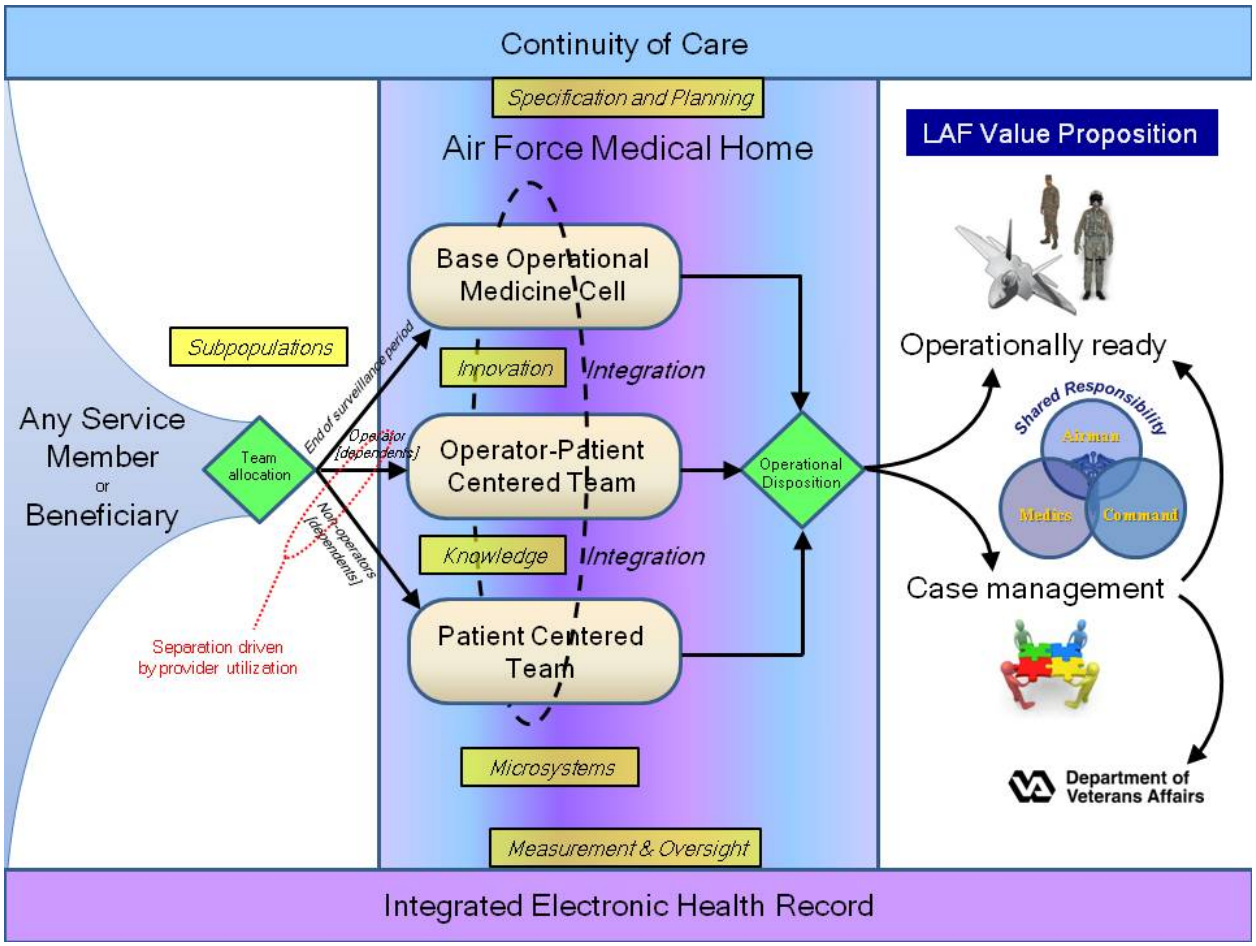

Figure 8. The Air Force Medical Home with constituent teams (the yellow text boxes illustrate elements of the four habits).

In this practice model, when any patient arrives at the AFMH, they are seen by the appropriate team, preserving continuity of care. The BOMC takes on a "specialty team" role, seeing an Airman or Air Force employee for an occupational assessment and then returning them to their primary care team. In an ideal (non-resource constrained) world, the operator/non-operator dyad could be dispensed with and any Airman would be assigned to the care team within the AFMH that is responsible for their subpopulation. For example, the AFMH at Base Z would have care teams tailored to the subpopulations at Base Z. Care teams would share many common processes and workflows to maintain standardization.

Conceptualizing the traditional installation medical treatment facility (MTF) as an AFMH—versus considering the MTF as comprising various medical homes—provides the opportunity to leverage evidence that the PCMH model can promote population health in addition to individual patient health (Garg and colleagues, *JAMA* 2013, 309;19:2001-2). It is well established that the social context in which an individual lives and works strongly influences health. Transformative medical homes are designed to address the social context of patient care. One method is ensuring that social determinants of health are key tenets of AFMH clinical guidelines. The AFMH also provides opportunities for monitoring basic unmet health and human performance sustainment needs of Airmen. The AFMH can then be empowered to develop outside the box, multidisciplinary interventions, that are context sensitive to the local environment, to systematically address these unmet needs. A key attribute of pediatric medical homes has been the home visit by nurses and other paraprofessionals to better understand the child's living conditions; by analogy, worksite visitations would be an important cost avoidance investment for the AFMH given its focus on operational medicine. Such worksite visits expands the scope of care to Airmen who do not regularly make office visits. Ongoing advances in technology and secure messaging will further enable the "population management" function of the AFMH, and new models of care are now rapidly being developed to address this fundamental aspect of healthcare.

A crucial step in enabling patient care teams within the AFMH to address population health is to apply the habit of specification and planning to the population served. Figure 9 illustrates the notion that the base population served is far from monolithic. To the contrary, it is comprised of heterogeneous subpopulations living in "neighborhoods" that are physically identifiable as organizations. These subpopulations have varying demographics, cultures, and health and human performance needs, all of which are shaped in large measure by the respective organizations' missions. Accordingly, patient care teams are given meaningful populations to manage by aligning organizations to specific care teams (Figure 10)—a variation on the habit of infrastructure design in which the patient care team is the microsystem optimized for the empanelled subpopulation. The BOMC then serves as the specialty team for

population health, providing aggregation of population health data for the entire base population as well as serving as the centralized management function for population health programs.

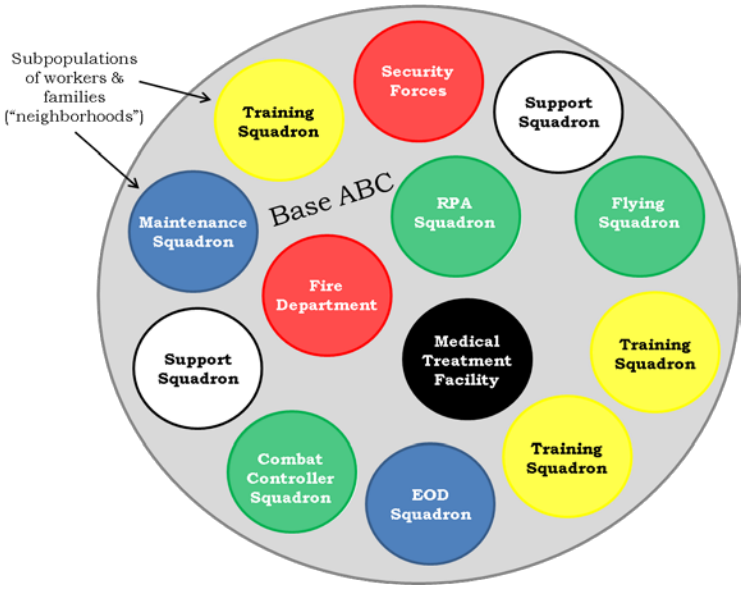

Figure 9. The base population as heterogeneous subpopulations living in "organizational neighborhoods."

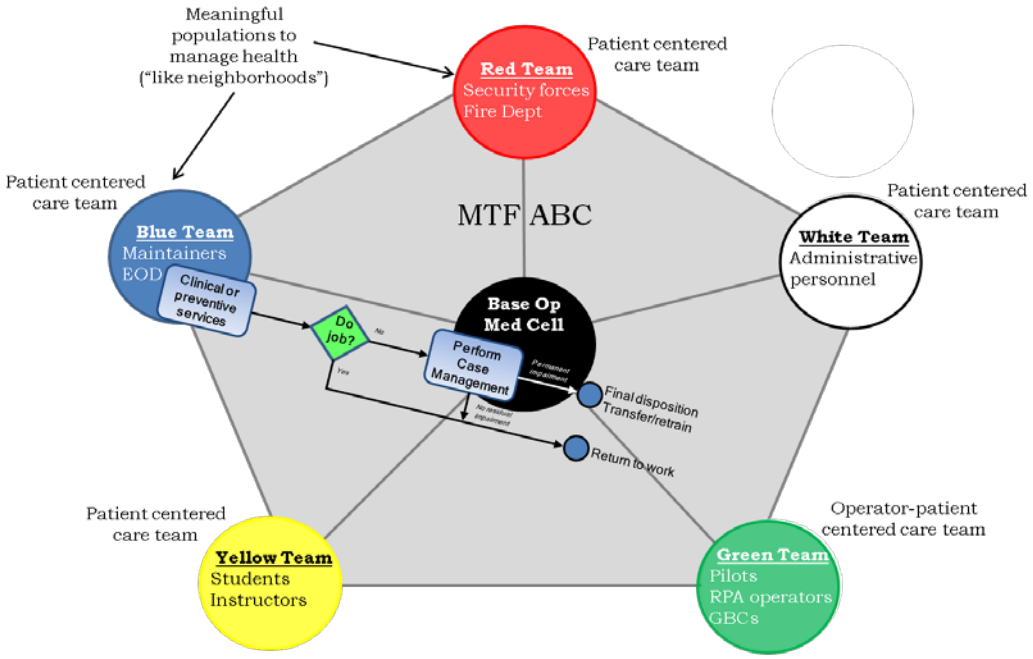

Figure 10. Patient care teams aligned with meaningful subpopulations to manage population health. The BOMC provides aggregation of population health functions for the overall base population.

AFMH Operator-Patient and Patient Centered Teams

Rather than uncoordinated, episodic care, we need to offer care that is well organized, coordinated, integrated, characterized by effective communication, and based on continuous healing relationships.

— Eric Larson

The PCMH healthcare delivery model is a relatively recent innovation for improving primary care. Patient centeredness implies health care that establishes a partnership among practitioners, patients, and their families (when appropriate) to ensure that decisions respect patients' wants, needs, and preferences and that patients have the education and support they require to make decisions and participate in their own care (Institute of Medicine, *Envisioning a National Health Care Quality Report*, 2001). Key changes to the traditional practice model include organizing care around patients, working in teams, and coordinating and tracking care over time (continuity of care). Care is facilitated by registries, information technology, health information exchange and other means to assure that patients get indicated care when and where they need and want it in a contextually appropriate manner.

Continuity of care and access to care

Every individual in the AFMH's population served is empanelled to a primary care provider (PCP—physician, physician assistant, or nurse practitioner) and a care team based on their, or in the case of beneficiaries, their sponsor's organization and job (i.e., Air Force Specialty Code). Empanelment supports continuity of care, critical to the AFMH because it has been shown to improve care, reduce costs, increase patient and provider satisfaction, and to reduce unnecessary demand. PCP continuity is most easily achieved by having providers who work in clinical duties at least 80% time. AFMH staff understand that continuity of care is the bedrock of good operational medicine. Continuity of care is measured regularly by determining the percent of patient total visits to the patient's own PCP or care team. AFMH goals are 70% PCP continuity and 90% care team continuity.

Continuity of care is achieved through the AFMH call center,[6] which has trained attendants who have clear instructions on how to balance the needs for both continuity and access. When a patient calls, the attendant will offer an appointment with the patient's PCP. Only if the patient wants to be seen that day or the following day, and the PCP is unavailable those days, will the patient be given an appointment with another provider on the same care team. The

[6] For economies of scale, a regional call center could be established to provide service to multiple sites.

AFMH prioritizes continuity but allows patients to choose access if their PCP is not promptly available.

Access begins with reliable phone access, which is accomplished by providing sufficient call center attendants to ensure that 98% of calls are handled and 80% are picked up within 90 seconds, with these metrics followed regularly. Call center attendants are knowledgeable of the AFMH care team system, how to use clinical protocols,[7] and how to refer callers to outside resources. Another continuity element is prompt access to appointments. The AFMH measures Third Next Available Appointment (TNA), a well-recognized access metric. The appointment template is opened up for only two weeks; no appointments are made after two weeks, meaning that TNA cannot exceed 14 days. The AFMH attempts to fill providers' schedules only for the first half of the morning and to leave the remainder of the schedule open for same or next day appointments. This goal may not always be possible during the first week. Patients are never denied an appointment. Either patients receive an appointment within two weeks, or if they request a later appointment they are asked to call back close to the time when they want the appointment, or their call is forwarded to the care team to squeeze them in that day.

In clinic, providers have appointment slots every 20 minutes. A 20-minute team huddle is scheduled before the morning and afternoon appointments and providers are allowed a 1-hour lunch break. Providers have one 20-minute slot for each five slots for catch-up and care coordination, but these slots can be moved to block time for other mission support activities. Assigned full-time providers are expected to see 90 patients per week with the goal that 80% of providers each see at least 80 patients. Providers can vary their schedule templates as long as they see enough patients per week. When a provider is participating in a group visit, the schedule is blocked for the time in the group visit.

To support continuity of care, providers are expected, within reasonable limits, to squeeze patients into their schedule for their empanelment, but not for another provider's empanelment. The registered nurse (RN) on the care team receive a request from the call center to squeeze in a patient, and depending on the acuity of the patient and the providers' workload, decide whether to add the patient to the schedule or provide a nurse encounter (face-to-face or by phone). If a provider needs to make a follow-up appointment for a patient for three or more weeks out, the patient can be entered into the care team registry and will be called back by a panel manager when they are due for

[7] For example, protocols to have the patient call 911 in the case of emergent symptoms, to call the cell phone of the RN on the patient's care team in case of urgent or non-emergent symptoms, to send an electronic message to the RN on the care team for non-urgent clinical matters, and to make appointments using the continuity of care priority.

care. Alternatively, the provider can task the call center to contact the patient when they need their appointment.

The AFMH must match demand and capacity at the level of care teams to ensure TNA remains under a few days. This matching can be accomplished in three ways: 1) risk-adjusted panel size to limit panel size to control demand, 2) adding capacity through RN and case manager care, and 3) adding capacity through group visits. Average active panel size is about 1,200 individuals. In aggregate, these policies and procedures ensure that access to care balances the needs of Airmen and the capabilities of clinic staff.

Care teams

All AFMH clinical activity is centered on the care teams. For patients, the care team is how they receive care. Care teams reside in distinct physical locations with clustered patient exam rooms and a common work area (for shared situational awareness) and are comprised of teams of co-located people. Within the larger teams, sub-units consist of a provider (physician, physician assistant, or nurse practitioner) always working with the same two medical technicians. Each care team has three full-time equivalent providers[8], six medical technicians, one behavioral health specialist, one RN, one care manager, one operational medicine technician, and one administrative person (Figure 11). The front desk personnel are also part of the care team and geographically sit between the physical location of the care team and the waiting room. The same people (with rare exceptions created by vacations or other absences) work on the same team. Patients are empanelled both to a care team and a provider/medical assistant triad.

[8] A provider assigned to a squadron medical element only contributes 0.5 FTEs.

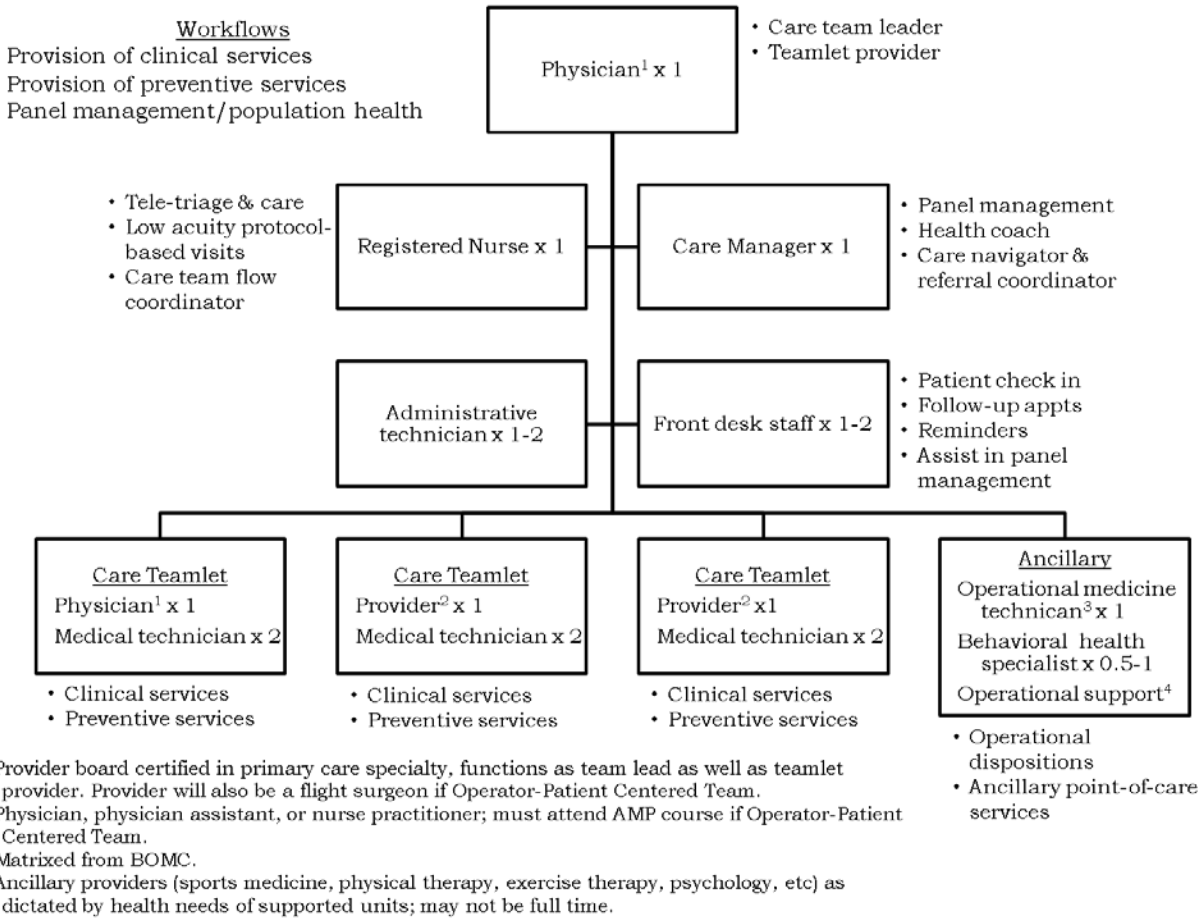

Figure 11. Care team organizational model.

Two people on each care team have leadership roles. One medical assistant is a half-time medical assistant and half-time medical assistant team manager (training and supervising medical assistants and doing their performance reviews). The care team's RN is also the flow coordinator, making sure that all runs smoothly and intervening to solve problems.[9]

Patient flow within the care team is orchestrated to be calm and organized. Each provider has three exam rooms so that pre-visit, visit, and post-visit (e.g., lab work, behavioral health discussions, care management) activities all happen in the same room. Everyone—providers, medical technicians, RN's, behavioral health providers—carries wireless workbooks so that the electronic

[9] For example, if a provider is running behind schedule due to unexpected complicated patients, the registered nurse will initiate the visit with patients who are waiting, allowing the provider time to be greatly shortened.

health record (EHR) goes with each team member rather than having team members go back to a computer to document care that is given.

Medical technician role

The medical technician brings the patient into the exam room, measures the vital signs, administers and reviews responses on the appropriate screening instruments, checks Individual Medical Readiness (IMR) status as applicable, and takes a detailed history using the appropriate EHR template. In the case of a patient overdue for IMR items or clinical preventive services, the medical technician performs the appropriate tasks. For example, if an immunization is needed, the medical technician draws up the immunization while the provider is seeing the patient and gives the shots in the post-visit. Medical technicians do not have the time to perform complicated medical reconciliation or behavior change counseling; those functions, if indicated, are provide by the care manager immediately following the provider visit. The medical technician pre-visit takes 10-15 minutes. If the provider wants the medical technician to do a post-visit activity, an electronic message is sent to the medical assistant. If an appointment is needed within two weeks, the medical technician would schedule the appointment.

Registered nurse role

Registered nurses within the AFMH have clearly defined roles that allow and require them to work at the very top of their license. The RN role has three interrelated parts: 1) addressing primary care situations that require skill in assessment and decision making, 2) handling less complex clinical matters that can be addressed using protocols with physician-written and approved standing orders, and 3) serving as a care team flow coordinator.

The first area of work involves addressing the call center directed electronic or phone messages regarding patients' problems. The second area of work involves management of specified acute problems (e.g., uncomplicated urinary tract and respiratory infections, uncomplicated conjunctivitis and ear infections). Some of these problems can be diagnosed and treated by the RN—without the provider—based on a phone call or face-to-face RN visit. Others come to the RN's attention through lab results (e.g., positive strep cultures or urine cultures). The RN would call these patients, provide patient education, and order the appropriate medications according to the standing orders. Thus, the RN is not diagnosing, but they are initiating treatment based on findings provided by the lab.

The RN role as care team coordinator often involves the nurse performing patient visits if a patient drops in, if no appointments are available, or if a provider is running behind schedule. If the RN visit involves a clinical problem with an associated RN treatment protocol (standing order), then the RN can do

that visit. More often, these visits turn into co-visits with the patient's provider coming in at the end of the visit to confirm a diagnosis and approve, change, or develop a care plan. The RNs in the AFMH do not work as chronic care managers because they do not have the time; for less complex patients, the team's care manager assumes that function, and for more complex patients, the task remains largely with the provider.

Care manager role

Care managers could also be called health coaches and navigators (i.e., care coordinators). They meet with patients with chronic conditions, doing patient education and smoking cessation counseling, providing health-related resources, and collaboratively setting goals and action plans with patients. In the twice-daily huddle, or in the provider visit, patients are identified who need a planned visit with the care manager. These visits ideally take place immediately after the provider visit. Because care managers are on the care team, they are able to hear and see things that indicate the need for care manager. Care managers might spend from 5 to 30 minutes with a patient. Care managers will increase in importance as the focus of healthcare shifts from problems to patient goals.

Behavioral health integration

The AFMH integrates behavioral health services into primary care, with one behavioral health professional (licensed social worker, psychologist, or licensed professional counselor) per care team. Behavioral health professionals have some 30–40 minute appointments, but they are available much of the time for warm handoffs—providers introducing patients to the behavioral health professional who conducts a 10-15 minute unscheduled visit done in the exam room after the provider visit. Warm handoffs may be planned during the morning or afternoon huddle or may take place when the provider uncovers a behavioral health problem.[10]

Operational medicine integration

The AFMH also integrates operational medicine services into primary care, with one operational medicine technician (e.g., flight and operational medicine technician) matrixed from the BOMC to each primary care team. The operational medicine technician provides occupational and operational medicine expertise to ensure a disposition recommendation (i.e., return to duty, not cleared for duty, temporary limitations, or permanent restrictions) is made on every Airman at every encounter. The operational medicine technician

[10] For example, a medical technician taking a patient's history may uncover depressive symptoms, administer the PHQ-9 depression screening questionnaire, and then contact the behavioral health professional.

meets with Airmen during the post-visit to collaboratively set goals with the Airman and their commander for return to duty as well as accomplish required documentation and notifications. The operational medicine technician also identifies Airmen that warrant occupational case management (i.e., expected periods of limited duty, permanent restrictions, or potential medically disqualifying condition) and ensures either a warm handoff to, or an electronic message is sent to, the BOMC case manager.

Front desk

Each care team has its own front desk staff, though they are generally situated between the care team space and the waiting area. The front desk does not handle telephones, which are separated from the care teams in the call center. The front desk staff checks in patients and may make follow-up appointments although medical assistants often perform that function during the post-visit. The front desk staff also makes confirmation calls to remind patients of appointments, calls to inform patients of normal laboratory or radiography results, and comb lists and registries to do panel management calls to remind patients with care gaps.

Referrals

The AFMH has at least one referral coordinator whose job is to arrange and track specialty and imaging referrals. Referral coordinators have a database of local specialists, arrange appointments, send clinical information to the specialist, inform the patient, and track in the EHR whether the referral was made, appointment kept, and specialty consultation letter returned to the AFMH. A tracking report is run every week and if no consultation letter has arrived, the referral coordinator follows up to determine if the patient did not keep the appointment or if the letter has not yet been sent.

Dental

The AFMH has a dental suite with dentists, hygienists, and dental assistants who provide acute dental care and comprehensive dental exams with an overall priority on preventive services.

Ancillary operational support services

Airmen empanelled to the Operator-Patient Centered Team have unique health threats that alter their propensity for injury or illness. There is also a relatively greater sense of urgency to return operators versus non-operators to full duty to increase the likelihood of mission success. For these reasons, the Operator-Patient Centered Team may be augmented with ancillary providers based on the unique health and performance needs of the supported operators.

Such ancillary providers may include sports medicine practitioners, physical therapists, exercise therapists, aerospace physiologists, psychologists, etc. Similar to the behavioral health professional, they would have scheduled appointments, but they would also be available for warm handoffs from providers.

Panel management

The AFMH uses panel management—managing the care of panels of patients—to improve the chronic and preventive care not only of patients who come in for appointments, but for all patients empanelled to care teams. Care teams provide outreach to patients who are overdue for follow-up or preventive services recommended by policy of well-accepted clinical practice guidelines. Outreach is done by making reminder phone calls or sending electronic messages to patients with care gaps. Care team members share the outreach work: some calls are done by the front desk staff, others by care managers, and others by behavioral health professionals. The patients needing outreach are identified through the care team's registry.

Registries are lists of patients with a particular condition or a health situation requiring monitoring. Registries include patients' demographic information and clinical data, including the dates when each indicated test or service was last done, with prompts indicating what is overdue. Clinical practice guidelines are embedded in the registries. The designated care team member responsible for outreach to patients identified on the registries as having care gaps contacts those patients to close the care gap. Providers are not involved in this routine work, thereby freeing up more time for providers to address patients' acute complaints and complex management issues. Panel management can also be done through in-reach, meaning that care gaps are addressed when patients come into the clinic.

AFMH Base Operational Medicine Cell

Shrink, shrink variation -- to reduce the loss.
— W. Edwards Deming

In contrast to the Operator-Patient and Patient Centered Medical Teams, the Base Operational Medicine Cell (BOMC) is a "specialty team" that focuses mainly on the effective and efficient execution of the prescribed physical exams and standards processes. It also provides operational and occupational medicine support and return-to-work/duty case management services to the Operator-Patient and Patient Centered Teams. The BOMC is the primary enabler to the AFMH in delivering consistent standards-based occupational health assessments and operational dispositions, as well as maximizing individual availability for work/duty, across the whole of the installation workforce.

As the Air Force workplace becomes increasingly complex, ranging from industrial maintenance facilities to traditional and non-traditional combat settings, occupational and operational medicine plays an increasingly vital and visible role in preserving the health and maintaining the performance of the uniformed and civilian workforce. In this environment, the demand for clinical personnel trained in understanding and managing the complex interplay of factors affecting worker health has grown significantly. Current occupational and operational medicine practice requires expertise in determining worker-job fit, recognizing potential adverse workplace health effects, recommending workplace changes to protect individuals' health, development of appropriate restrictions based on worker impairments, using preventive medicine tools to improve the health of defined worker populations, and managing return-to-work processes (a system of health monitoring and interventions designed to optimize the time in which ill or injured workers can safely return to work/duty). Perhaps most importantly, the BOMC serves as the key bridge between the medical community and the employer or operational community as advocates and enablers for health promotion and health protection.

Clinical occupational medicine services

Pre-placement examinations

The purpose of the pre-placement examination (PPE) is to ensure that a civilian or military member examined does not have any medical condition(s) that may be aggravated by job duties, may affect the health and safety of others, or may adversely impact workers' capabilities to perform the job. Incumbent on providers conducting a PPE is a thorough understanding of the job duties and the work environment, which should utilize knowledge obtained

from work-site visits. Pre-placement recommendations are based on any or all of the following considerations:

- Medical history
- Occupational history
- Assessment of the organs or systems likely to be affected by the job to which assignment is being considered, and which are necessary for safe and effective performance of the job.
- Evaluation of the description and demands of the job to which assignment is being considered
- Compliance with OSHA, Department of Transportation (DOT), or other pertinent regulations (e.g., AFI 48-123).

Pre-placement recommendations address only two things: 1) a member's functional abilities and limitations in relationship to functional requirements—that is i.e., can this person currently perform the specified job, with or without accommodation; and 2) whether the member can perform the job without posing a direct threat to the health or safety of him/herself or others.

Periodic health examinations

The health status of members should be reviewed periodically where there is likelihood that workplace exposures or activities could have an adverse health effect. This review may be limited to those organs or systems likely to be affected. Certain occupations, such as those regulated by the DOT or as specified in AFI 48-123, require periodic medical evaluations for licensing or certification purposes. Other occupations come under the auspices of OSHA, which has established standards for periodic medical evaluations of workers exposed to regulated substances (i.e., medical surveillance). Another type of periodic examination is the so-called Periodic Health Assessment (PHA) as defined by Department of Defense and service policy.

Diagnosis and treatment of occupational and environmental injuries or illnesses, including rehabilitation

Occupational and environmental injuries and illnesses must be diagnosed and treated promptly. Occupational health personnel are uniquely qualified to diagnose work-related illnesses and injuries because of their knowledge of and experience with the workplace and environment. Occupational health personnel can objectively resolve issues about occupational causation of illness or injury and provide recommended and/or required inputs into the primary care and rehabilitation plans of the member. Given medical-operational coordination/cooperation and occupational health expertise developing reasonable and appropriate restrictions, workplaces are often the best sites for rehabilitating workers.

Evaluating impairment and fitness for duty

The primary care clinician will encounter members with illnesses or injuries who do not appear medically able to return to a particular position or who have impairing conditions that are proscribed by law or policy (e.g., AFI 48-123, PRP/PSP special duty programs). In such cases, the purpose of these evaluations is to estimate the member's work capacity based on their clinical condition and assessment or estimation of their functional performance. These capacities are compared to functional requirements of the job to recommend restrictions which may result in alternative or modified duty assignments for a certain period of time. A member with a work-limiting condition who has reached maximal medical improvement (i.e., further recovery and restoration of function can no longer be anticipated) is evaluated by a non-medical authority (with medical inputs) for presence of permanent impairment and resultant disability for an accommodation decision.

Return to work evaluations

Following a period of medically limited duty, a member may be required to have a medical evaluation before they resume job duties. The purpose of these examinations is to assist in proper placement of the member to prevent future injury and illness. The focus of these examinations is on the member's health. The decision related to the ability to work is partly based on whether the member's health will be adversely affected by the work duties. In some cases, it may be appropriate to recommend alternative or modified duty assignments for a certain period of time (i.e., accommodating restrictions). All decisions regarding work capabilities, however, are based on a thorough review of the job history.

Travel and deployment medicine

Civilian or military members require an assessment of immunizations and healthcare needs based on their travel/deployment itinerary and personal health history to increase the likelihood of a healthy trip/deployment. Members are administered needed immunizations and chemoprophylaxis and provided health education and counseling on the prevention and treatment of commonly encountered health problems at their intended destination. Screening of returning members is performed based on risks specific to the member as well as the geographic region of travel.

Termination and retirement administration

The purpose of these evaluations is to assess a member's health status when exposure ceases or employment terminates. The member is informed

concerning their health status and advised of any adverse health effects due to work or environmental exposures.

Occupational case management

Occupational health personnel provide case management of civilian and military workers meeting the following criteria:

- Work-related illness/injury
- Member with impairment working in a category 1 shop
- Prolonged impairment, defined as 60 or more days in aggregate over the preceding 365 days
- Member with restrictions requiring accommodation
- Member in job requiring medical surveillance
- Pregnancy

The occupational health nurse case manager coordinates with the member's primary care team to recommend treatment plans, monitor outcomes, and maintain a strong communication link among all the parties to include the member, their worksite, and their health care team. Care is delivered with the goal of returning the member to pre-illness or pre-injury function or to the highest level of functioning achievable. Case management facilitates safe and timely return-to-work and results in cost savings when well executed and appropriate resource allocations are made to obtain rapid and effective medical interventions. The occupational health nurse case manager holds periodic case reviews with the respective primary health care teams. The case manager will also educate the supported primary health care teams on occupational trends observed in their respective empanelment.

Non-clinical activities

Maintenance of occupational medical records

The occupational health program must maintain occupational medical records on each member, documenting the reasons for and results of all evaluations. These records should contain data sufficient to reproduce a chronology of the member' medical occurrences, illnesses, and injuries. Government regulations require retention of exposure and medical records and x-rays for specified periods of time related to toxic substances or harmful physical agents.

Implementation of programs for the use of indicated personal protective devices

Occupational health personnel provide expertise in properly selecting and fitting personal protective devices, determining that the devices provide

adequate protection to members and educating the members in proper utilization and care of equipment.

Evaluation, inspection, and abatement of workplace hazards

Occupational health personnel, in conjunction with bioenvironmental engineering personnel, inspect and evaluate the work place regularly, looking for potential health and safety hazards. The personnel are familiar with job descriptions and the chemical, physical, and biological agent exposures that may result from those jobs. When hazards are found, recommendations for risk reduction and/or abatement follow.

Periodic evaluation of the occupational and environmental health program

These evaluations are necessary to assure the program meets its objective effectively. This evaluation occurs in collaboration with the installation bioenvironmental engineering function. Periodic review is necessary to make sure that high standards are being met.

Specialist care team

Although a "specialty team," the BOMC follows the model of the other AFMH care teams. The BOMC care team resides in a distinctly defined physical location with clustered patient exam rooms and collocated ancillary exam services (e.g., dental, optometry, audiology) adjoining a common work area, thereby providing shared situational awareness. The BOMC work area is also in close proximity to that of the Operator-Patient and Patient Centered Teams to facilitate communication and care coordination. The sub-organization of the team consists of the clinical component and the population health component.[11] The clinical component is comprised of an occupational medicine physician[12] and two occupational health nurses working with up to three "teamlets" comprised of a physician assistant, three operational medicine technicians, and one administrative person. The same people (with rare exceptions created by vacations or other absences) work on the same teamlet. The population health component is comprised of a preventive medicine physician, health care integrators (HCIs), health services managers, and personnel comprising the medical management, health promotion, and public health functions.

[11] The population health component will be elaborated in further detail in a subsequent version of this CONOPS.

[12] Depending on workload, the base SGP may also serve as the occupational medicine provider.

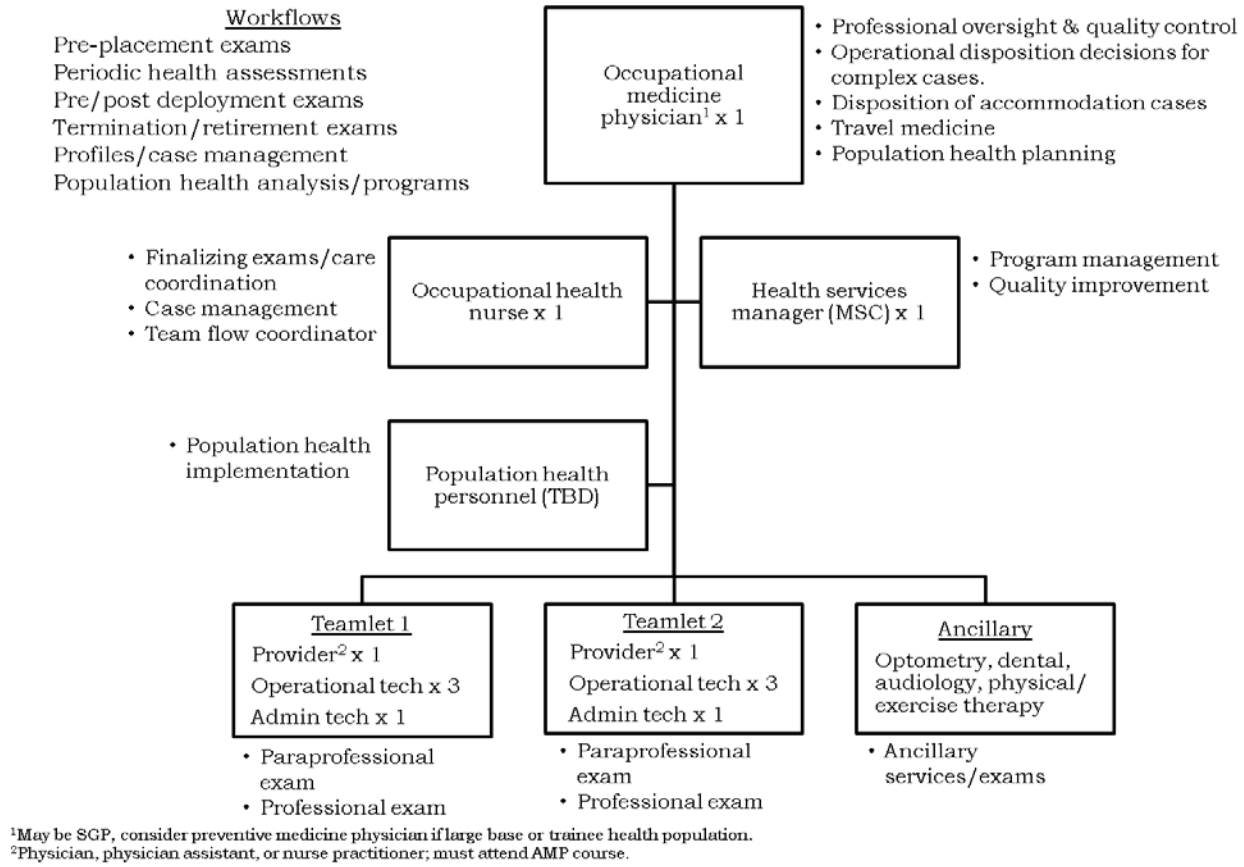

Figure 12. Base Operational Medicine Cell organizational model.

Two people on the BOMC care team have leadership roles. One operational medicine technician is a half-time technician and half-time technician team manager (training and supervising operational medicine technicians and doing their performance reviews). One of the BOMC care team's occupational health nurses is also the flow coordinator, making sure that all runs smoothly and intervening to solve problems.

Patient flow within the care team is calm and organized according to well established workflows and protocols. Each teamlet has three exam rooms so that pre-visit (paraprofessional), visit (professional), and post-visit activities all happen in the same room. Exam equipment is either in the exam room or brought to the room during the pre-visit. Immunizations and necessary blood draws for laboratory evaluations are accomplished during the post-visit.

Operational medicine technician role

The operational medicine technician brings the member into the exam room, measures the vital signs, administers and reviews responses on the

appropriate screening instruments, takes a detailed history using the appropriate exam-specific EHR template, and conducts all components of the para-professional portion of the exam. In the case of an Airman who is overdue for IMR items or clinical preventive services, the medical assistant performs the appropriate tasks when appropriate. For example, if an immunization is needed, the operational medicine technician draws up the immunization while the provider is seeing the Airman and gives the shots in the post-visit. The operational medicine technician does not provide extensive behavioral change counseling; that service is scheduled with the primary care team as it needs to be integrated into the Airman's overall care plan. The operational medicine technician ensures warm handoffs with providers of ancillary services (e.g., dental, optometry) when required for the specified exam. The operational medicine technician pre-visit takes 20-30 minutes depending on the scope of the para-professional part of the exam. If the provider wants the operational medicine technician to do a post-visit activity, an electronic message is sent to the technician. The operational medicine technician ensures a warm handoff to the occupational health nurse for an overall assessment and disposition of the member as well as coordination of care planning with the member's primary care team as appropriate. The operational medicine technician manages the exam record in the EHR until all data is collected (e.g., laboratory and radiology results, specialty consults as appropriate) and forwards the completed exam record to the occupational health nurse for review and care planning recommendations.

Physician assistant role

The physician assistant performs the professional portions of physical exams and assists in the provision of occupational and preventive medical services as appropriate. The physician assistant also handles less complex operational medicine encounters that can be addressed using protocols with physician-written and approved standing orders.

Occupational health nurse role

As in the primary care teams, the occupational health nurse has clearly defined roles that allow and require them to work at the very top of their license. The occupational health nurse role has three parts: 1) finalizing non-complex exams and completing care coordination and planning, 2) performing occupational case management, and 3) serving as a care team flow coordinator.

The first area of work involves the occupational health nurse finalizing exam visits by exercising his/her skill in occupational assessments and decision-making. In addition, the occupational health nurse makes recommended updates to the member's care plan and coordinates those recommendations with the member's primary care team. Importantly, execution of the care plan

remains the responsibility of the primary care team, thereby ensuring continuity of care. In complex cases, the occupational health nurse elevates decision-making to the occupational medicine provider.

The second area of work involves case management of members who have work restrictions. The occupational health nurse maintains a registry of members with temporary or permanent work restrictions. Based on return-to-work guidelines and protocols, the occupational health nurse meets with members with work limitations to reassess their functional status, coordinate rehabilitation-related services, and collaboratively set return to work goals and action plans. The occupational health nurse also coordinates with the member's primary care team to recommend adjustments to treatment plans, monitor outcomes, and maintain a strong communication link among all the parties to include the member, their worksite, and their primary care team. The occupational health nurse holds periodic case reviews with the other AFMH care teams. They also educate the supported primary care teams on occupational trends observed in their respective empanelment.

The occupational health nurse role as care team coordinator often involves receiving electronic or phone messages from the call center regarding occupational or operational medicine problems faced by members. The occupational health nurse may perform visits if a member drops in, if no appointments are available, or if a provider is running far behind schedule.

Occupational medicine physician role

The occupational medicine physicians provides professional oversight and quality control and make occupational and operational disposition decisions for complex cases. They are also responsible for disposition of cases in which a member has work limitations and has reached maximal medical improvement, in which case the member will require permanent restrictions resulting in possible accommodation. They also serve as AFMH travel medicine consultants. Depending on installation workload, this job role may be assigned to the SGP.

Physical and exercise therapist roles

One physical therapist and one exercise therapist are integrated onto the BOMC. These therapists have a mix of scheduled individual and group appointments, but they are also available for warm handoffs—providers introducing members to the therapist who conducts a 5–15 minute unscheduled visit done in the exam room after the provider visit. Warm handoffs may be planned during the morning or afternoon huddle or may take place when the provider uncovers a musculoskeletal problem. Common issues are temporary work or exercise limitations related to muscular weakness or

joint dysfunction. The therapists work with members on goal setting and action plans.

Front desk

The BOMC has its own front desk staff, though they are generally situated between the care team space and the waiting area. The front desk does not handle telephones, which are separated from the care teams in the call center. The front desk staff checks in Airmen. The front desk staff also makes confirmation calls to remind Airmen of appointments, calls to inform Airmen of normal laboratory or radiography results, and review lists and registries to do panel management calls to remind members with medical surveillance gaps.

SGP role

As the installation's occupational and operational medicine consultant, the SGP is the primary individual responsible for delivery and oversight of occupational and operational medicine services.

Health services manager role

The health services manager directly supports the SGP by managing health services activities to include plans and operations, human resources, local medical information systems, logistics, and budgetary and fiscal management; they also manage occupational medicine improvement studies and programs.

Ancillary Services

Clinical services such as Optometry, Physical Therapy and Audiology are matrixed to the BOMC and assist in pre-placement and periodic (medical surveillance) examinations and rehabilitation/return medical programs.

Performance Data

Make strategy everyone's everyday job.
— Robert Kaplan & David Norton

In the past, aligning every staff member to a strategy was not critical. In the age of repetitive, task-based jobs, employees did not have to understand or implement strategy. Rather, they simply had to perform the narrow tasks management assigned them and trained them to do. Today, this type of work is virtually obsolete, replaced by knowledge-based work. Employees must be aligned to the strategy in order to create value.

The AFMH uses performance data, displayed in terms of a Balanced Scorecard (Figure 13), to demonstrate how the AFMS as a whole, each site, each care team, and each provider has performed on a number of metrics. The Balanced Scorecard is posted on the wall of each care team work area and it shows everyone whether or not performance has reached organizational and team goals and where improvement is needed. The Balanced Scorecard is updated every couple of weeks with metrics relating to the core set of base-level value producing services (see pages 6–7). The use of the Balanced Scorecard is a visible example of one of the four habits of high-value healthcare organizations (see page 9)—that is, measurement and oversight. The twice-daily team huddles are used to discuss areas needing improvement, which is another example of one of the four habits—that is, knowledge and innovation. The use of a Balanced Scorecard facilitates the AFMH being a data-driven organization.

Core Service	Metric	2011	2012	YTD 2013	Goal
Direct Patient Care	*Continuity and Access*				
	% of Visits with PCP* (does this include only military?)	69.8%	72.7%	77.2%	>70%
	% of Visits with Primary Care Team (same question)	76.0%	77.8%	81.6%	>90%
	Days to Third Available Appointment	6.0	4.2	3.9	<14
	Do we want patient satisfaction #s (Likert 5 scale)	4	4.5	4.2	4.5
	Call wait times? Hang-ups?	10	7	5	< 5 min
	*Is there a way to track use non-military medical resources?				
Operational Medicine	% Exams Processed < 2 weeks				
	% Exams with No Defects/Errors				
	% Members with Overdue IMR Items				
	% on Profile			11.3%	
	Target shop of the month stats				

Case Management	Average Days on Profile			13	
	% of Profile Durations > Benchmark			4.7%	
	# of Referrals Pending			17	
	Average days to Accomplish Referral			23	
	% of Referral Times > Benchmark			16.0%	
	Top 10 limiting conditions – focus on top 2-3 and monitor for interventions				
	Hearing Program Stats (STS)				
Health	% with Blood Pressure >140/90			49.0%	
	% with CRAM Score (that meet the criteria)			82.7%	
	% with CHD Risk > 10%			1.7%	
	Average PT Score			76.7%	
	Immunization status – specific targets (flu, HPV, Pneumovax, dtap, etc.				
	% with BMI > 25	30	25	20	10
	% HEDIS measures?				
	Does CRAM process ensure proper screening per USPSTF guidelines? Should we put screening here or under PCM?				

Figure 13. Fictional ACHM Balanced Scorecard